Abstract

An ion implantation system contains, in the ion implantation chamber, a workpiece holder that scans vertically while tilting a wafer at an angle of rotation that is rotated out of a perpendicular orientation with respect to the axis of projection in an ion beam. The implant angle into an implant surface on wafer that is retained by the workpiece holder is adjusted by selective rotation of the workpiece holder about its path of motion. A Faraday cup scans the ion beam along the intended location of the implant surface to form a setup measurement plane. The ion beam quality is adjusted to enhance beam uniformity along the setup plane according to these tilt-angle measurements. A charge neutralizing device, such as a flood gun, is moved in operational alignment with the workpiece.